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Francis Baily, Esq., President, in the Chair.

The following communications were read:—

I. On the Apparent Magnitudes of the Fixed Stars. By C. Piazzi Smyth, Esq. Communicated by Captain W. H. Smyth, R.N.

The author complains of the want of information on the methods of observing the apparent magnitudes of the stars, and of the little attention which has been paid to the proposal of a prize for a successful photometer (*Memoirs*, Vol. I. p. 507), by the Astronomical Society.

He proposes to employ telescopic vision, and to measure the degrees of brightness of every star by means of the obscuration which is necessary to make it vanish. By this means, the necessity of direct comparison between stars taken two and two is avoided, and an absolute zero is established.

For producing the obscuration, he proposes, in the first place, a long wedge of blue coloured glass (with its prismatic qualities counteracted by a similar transparent wedge), made to slide between the object and eye-glasses, a little way out of focus. This wedge might be fixed on the eye end of the telescope, mounted either in a micrometer frame, or made to move in the manner of a barometer scale.

Another plan is, to have a coloured *disc* of glass in the tube, capable of sliding up and down in it, by which means the object will be differently obscured, on account of the variation of the diameter of the pencil of rays at different distances.

The author then dwells on the method of observation, the means of getting rid of the atmospheric effect, the establishment of a common unit of comparison, and the obviation of the practical difficulty of obtaining a uniform rate of obscuration.

II. On an Astronomical Time Watchcase. By the Rev. Professor Chevallier.

The author has invented a contrivance, by means of which a common watch can, at pleasure, be made to denote sidereal time,

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nearly enough for the purpose of warning an observer when his presence will be wanted in the observatory.

The principle of the contrivance is to *set a moveable face to the hands of the watch instead of setting the moveable hands to a fixed face*. This is effected by means of a circular box containing the watch. The lid has a circular aperture, through which the hands of the watch may be seen. Upon the lid is a circular plate, upon which is engraved a double circle of hours, from 0 to 12 and from 12 to 24; and a concentric inner circular plate, moveable separately, upon which the minutes are engraved. A small pointer projects from the part of the inner circle, which indicates 60^m, directing the eye at once to that point as the temporary upper part of the face.

In order to set this watch-case for use, it is quite unimportant what time the watch itself indicates. The lid is simply placed so that the hour-hand of the watch may point to the part of the hour-circle corresponding to the sidereal hour: the minute-circle being subsequently turned, till the minute corresponding to the minute of sidereal time is opposite to the minute-hand of the watch.

The hands of the watch then, *as referred to the temporary position of the moveable circles*, indicate sidereal time; and, if they are set a little too fast, they will continue to do so to the nearest minute for almost six hours; thus giving the observer upon his table a duplicate of his observatory clock, sufficiently exact for the purpose which he wants.

It is plain that this contrivance can, with the greatest ease, be applied to any common watch-case; or, if a watch-glass were made capable of being turned round, the hours might be marked upon the glass, the minutes being engraved upon a moveable rim upon the watch-case.

III. Mean Places, for Jan. 1, 1842, of 50 Telescopic Stars, within two degrees North Polar Distance, observed in the years 1842 and 1843, at Markree, in the County of Sligo. By E. J. Cooper, Esq. and A. Graham, Esq.

In the reduction of the observations the index correction was, with a very few exceptions, taken from observations of *Polaris*; using the apparent place given in the *Nautical Almanac*, corrected for the terms of nutation involving 2 ☽. From the corrected observed right ascensions and declinations, the ecliptic polar distance and angular distance from the solstitial colure were determined, using the apparent obliquity of the *fixed* ecliptic, after having allowed for the motion of the equinoxial points along the equator. Applying the correction for aberration, precession, and nutation, the mean of the resulting co-latitudes and co-longitudes, with the mean obliquity of the *fixed* ecliptic for the 1st January, 1842, were used in finding the mean right ascensions and declinations.

In order that a judgment may be formed of the accuracy of the results, columns are annexed, to shew the extreme difference of the mean co-latitudes and co-longitudes which resulted from each observation.

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